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10/536,845	05/31/2005	Mark Thomas Johnson	NL021322US1	6221

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EXAMINER	
CHOWDHURY, AFROZA Y	
ART UNIT	PAPER NUMBER
2629	
MAIL DATE	DELIVERY MODE
11/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/536,845	JOHNSON ET AL.	
	Examiner	Art Unit	
	AFROZA Y. CHOWDHURY	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment received on **July 7, 2009** has been entered. Claims 1-12 and 14-29 are currently pending. Applicant's amended claims and arguments are addressed herein below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-12 and 14-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 14, and 22, "**a pulse current applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element**" is not described in the specification as submitted originally.

4. Claims 1-12 and 14-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 1, 14, and 22, "**maintaining a voltage applied to the light emitting element within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage, such that a pulse current applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element**" not described in the specification in such a way as to enable one skilled in the art that how it is possible to apply a pulse current to a light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element while maintaining a voltage applied to the light emitting element within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 14, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 14, and 22, "**maintaining a voltage applied to the light emitting element within a specified voltage range that is above a fusing voltage**

and below a leakage threshold voltage, such that a pulse current applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element" not clear. How it is possible to apply a pulse current to a light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element while maintaining a voltage applied to the light emitting element within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage is not understood.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-8 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sanford et al.** (US Patent 6,580,657) in view of **Andry et al.** (US Pub. 2003/0094616) and in further view of **Hirai et al.** (US Patent 6,355,393).

As to claims 1 and 14, Sanford et al. discloses a method for driving an organic LED display device having a first and a second electrode sandwiching an organic layer (fig. 1B(102)), col. 4, lines 3537) defining a plurality of light emitting elements (figs. 1(A-B), col. 3, lines 56-63), said method comprising:

controlling the duty cycle of said light emitting element, so that a desired light intensity is emitted from said light emitting element (col. 6. lines 32-40).

Sanford et al. does not explicitly teach maintaining a voltage applied to the light emitting element within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage, such that a pulse current applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element.

Andry et al. teaches maintaining a voltage applied to the light emitting element within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage ([0036]).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to use the idea of Andry et al. of maintaining certain voltage range for driving a light emitting element in order to modify the display device of Sanford et al. to make a display device where voltage needs to be applied within certain range in order to reduce the threshold voltage instability (see [0002] in Andry et al.).

Sanford et al. (as modifies by Andry et al.) does not specifically teach a pulse current is applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element.

Hirai et al. teaches a pulse current is applied to an organic light emitting element (col. 9, lines 13-17).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to incorporate the idea of applying a pulse current to an organic

light emitting element in order to modify the display device of Sanford et al. (as modifies by Andry et al.) to make an organic LED display device with better performance and reduced risk of short circuits (as best understood).

As to claims 2 and 15, Sanford et al. teaches a method where the duty cycle of the light emitting element is decreased in order to emit a desired light intensity without requiring an applied voltage below a specified lower limit (col. 7, lines 6-29).

As to claims 3 and 16, Sanford et al. teaches a method wherein a default duty cycle of the light emitting element is less than 100%, and wherein the duty cycle is increased in order to emit a desired light intensity without requiring an applied voltage above a specified upper limit (col. 9, lines 60 -67).

As to claim 4, Sanford et al. discloses a method comprising: determining an expected voltage change over time, required to maintain a constant drive current in the light emitting element, and adjusting the duty cycle of said light emitting element accordingly (col. 6, lines 32-40).

As to claim 5, Sanford et al. teaches a method including: monitoring an average pixel voltage in the display, and adjusting the duty cycle of each light emitting element based on this average voltage (col. 6, lines 32-40).

As to claim 6, Sanford et al. teaches a method including: monitoring a voltage of a light emitting element, and adjusting the duty cycle of the light emitting element based on this voltage (col. 6, lines 32-40).

As to claim 7, Sanford et al. teaches a method wherein the duty cycle is controlled over each frame (col. 6, lines 32-40).

As to claim 8, Sanford et al. teaches a method where the duty cycle is controlled over a plurality of frames (col. 6, lines 32-40).

As to claim 9, Sanford et al. teaches a method wherein the display device is of active matrix type (col. 1, lines 31-36, col. 4, lines 21-24).

As to claim 10, Sanford et al. teaches a method wherein the duty cycle is controlled for each light emitting element individually (fig. 5).

As to claim 11, Sanford et al. teaches a method wherein the duty cycle is controlled for a plurality of light emitting elements jointly (fig. 1A, col. 4, lines 21-24).

As to claim 12, Sanford et al. teaches a method wherein the display device is of passive matrix type (col. 1, lines 25-30).

As to claim 17, Sanford et al. teaches a device wherein controlling means comprises a transistor connected between the light emitting element and the voltage applying means, and a duty cycle controller connected to the gate of the transistor (fig.5).

As to claim 18, Sanford et al. teaches a device where controlling means comprises a duty cycle controller connected to the voltage applying means (fig. 5).

As to claim 19, Sanford et al. teaches a device wherein said controlling means comprises a duty cycle controller connected to the other side of the light emitting element in relation to the voltage applying means (fig. 5).

As to claim 20, Sanford et al. teaches a device where voltage applying means comprises a power line and a drive transistor connected between the power line and the light emitting element (fig. 5).

As to claim 21, Sanford et al. teaches a device wherein a controlling means are arranged to jointly control the duty cycle for a plurality of light emitting elements (fig. 5).

As to claim 22, Sanford et al. teaches a display device comprising:

a plurality of light emitting elements (fig. 1A, col. 3, lines 56-63), and

a controller that is configured to control a voltage and duty cycle of each light emitting element (col. 5, lines 48-59), and

the controller is configured to control the duty cycle of each light emitting element to provide a desired light intensity (col. 5, lines 48-59, col. 6, lines 6-15).

Sanford et al. does not explicitly teach a display device wherein the light emitting element exhibits a higher likelihood of fusing short circuits below a first voltage and higher likelihood of leakage current above a second voltage, while maintaining the voltage applied to each light emitting element to be above the first voltage and below the second voltage, such that a pulse current applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element.

Andry et al. maintaining the voltage applied to each light emitting element to be above the first voltage and below the second voltage ([0036]).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to use the idea of Andry et al. of applying certain voltage range for driving a light emitting element in order to modify the display device of Sanford et al. to make a display device wherein the light emitting element exhibits a higher likelihood of fusing short circuits below a first voltage and higher likelihood of leakage current above a second voltage and where voltage needs to be applied within certain range in order to reduce the threshold voltage instability (see [0002] in Andry et al.).

Sanford et al. (as modifies by Andry et al.) does not specifically teach a pulse current is applied to the light emitting element during the duty cycle is substantially greater than a leakage current of the light emitting element.

Hirai et al. teaches a pulse current is applied to an organic light emitting element (col. 9, lines 13-17).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to incorporate the idea of applying a pulse current to an organic light emitting element in order to modify the display device of Sanford et al. (as modifies by Andry et al.) to make an organic LED display device with better performance and reduced risk of short circuits (as best understood).

As to claim 23, Sanford et al. discloses a display device including:

a drive transistor associated with each light emitting element that is configured to provide the voltage to the light emitting element (figs. 5, 6), and

a duty cycle transistor associated with each light emitting element that is in series with the drive transistor and the light emitting element (figs. 5, 6).

As to claim 24, Sanford et al. teaches a display device including:

a drive transistor associated with each light emitting element that is configured to provide the voltage to the light emitting element from a supply line (figs. 5, 6), and

one or more duty cycle switches that are configured to limit the supply line based on the duty cycle (figs. 5, 6).

As to claim 25, Sanford et al. teaches a display device including:

a drive transistor associated with each light emitting element that is configured to provide the voltage to the light emitting element via a series coupling between first and second supply lines (figs. 5, 6), and

one or more duty cycle switches that are configured to control at least one of the first and second supply lines based on the duty cycle (figs. 5, 6).

As to claim 26, Sanford et al. teaches a display device, wherein the first voltage is above -5 volts, and the second voltage is below 3 volts (col. 7, lines 27-28).

Sanford et al. does not specifically teach a display device, wherein the first voltage is above 4 volts, and the second voltage is below 11 volts.

However, it is obvious to one skill in the art to design a display device, wherein the first voltage is above 4 volts, and the second voltage is below 11 volts for some specific application.

Claims 27-29 are rejected the same as claims 5, 7, and 8, respectively.

Response to Arguments

9. Applicant's arguments with respect to claims 1-12 and 14-29 have been considered but are moot in view of the new ground(s) of rejection.

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AFROZA Y. CHOWDHURY whose telephone number is (571)270-1543. The examiner can normally be reached on 7:30-5:00 EST, 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC
11/19/2009

/Bipin Shalwala/
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